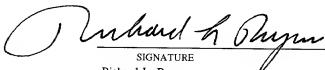


Form PTO-1390 (REV 10-95)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER 702-001034
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371			U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 09/555548
INTERNATIONAL APPLICATION NO. PCT/NL98/00678	INTERNATIONAL FILING DATE 01.12.98 (December 01, 1998)	PRIORITY DATES CLAIMED 03.12.97 (December 03, 1997)	
TITLE OF INVENTION A DEVICE AND A METHOD FOR AFFIXING OBJECTS TO PRODUCTS			
APPLICANT(S) FOR DO/EO/US Antonius Adrianus Arnoldus SMITS			
<p>Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:</p> <ol style="list-style-type: none"> <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). <input checked="" type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). <input checked="" type="checkbox"/> has been transmitted by the International Bureau. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> have been transmitted by the International Bureau. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. <input checked="" type="checkbox"/> have not been made and will not be made. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). <input type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). <p>Items 11. to 16. below concern document(s) or information included:</p> <ol style="list-style-type: none"> <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <ul style="list-style-type: none"> <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. <input type="checkbox"/> A substitute specification. <input type="checkbox"/> A change of power of attorney and/or address letter. <input checked="" type="checkbox"/> Other items or information: <ol style="list-style-type: none"> WO 99/28194-Front Page with Abstract, Specification, Claims, Drawings and Search Report (20 pp.) Written Opinion (5 pp.) International Preliminary Examination Report (6 pp.) 			

422 Rec'd PCT/PTO

01 JUN 2000

U.S. APPLICATION NO. (If known, use 37 CFR 1.5)		INTERNATIONAL APPLICATION NO. PCT/IL98/00678		ATTORNEY'S DOCKET NUMBER 702-001034	
09/555548				CALCULATIONS PTO USE ONLY	
17. <input checked="" type="checkbox"/> The following fees are submitted:					
BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):					
Search Report has been prepared by the EPO or JPO.....				\$840.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482)				\$670.00	
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))				\$760.00	
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO				\$970.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)				\$96.00	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$ 840.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input checked="" type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 130.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	19 - 20	0	X \$18.00	\$ 0.00	
Independent claims	2 - 3 =	0	X \$78.00	\$ 0.00	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00	\$ 0.00	
TOTAL OF ABOVE CALCULATIONS =				\$ 970.00	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).				\$ 0.00	
SUBTOTAL =				\$ 970.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ 0.00	
TOTAL NATIONAL FEE =				\$ 970.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31).				\$ 0.00	
TOTAL FEES ENCLOSED =				\$ 970.00	
				Amount to be: refunded	\$
				charged	\$
<p>a. <input checked="" type="checkbox"/> A check in the amount of \$ <u>970.00</u> to cover the above fees is enclosed.</p> <p>b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.</p> <p>c. <input checked="" type="checkbox"/> The Assistant Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>23-0650</u>. A duplicate copy of this sheet is enclosed.</p>					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO Richard L. Byrne 700 Koppers Building 436 Seventh Avenue Pittsburgh, Pennsylvania 15219-1818 Telephone: (412) 471-8815 Facsimile: (412) 471-4094					
				SIGNATURE  Richard L. Byrne NAME 28,498 REGISTRATION NUMBER	

422 Rec'd PCT/PTO 01 JUN 2000

PATENT APPLICATION/PCT
Attorney Docket No. 702-001034

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :
 ANTONIUS A. A. SMITS : A DEVICE AND A METHOD FOR
 : AFFIXING OBJECTS TO PRODUCTS
 International Application :
 No. PCT/NL98/00678 :
 International Filing Date :
 01 December 1998 :
 Priority Date Claimed :
 03 December 1997 :
 Serial No. Not Yet Assigned :
 Filed Concurrently Herewith :

Pittsburgh, Pennsylvania

June 1, 2000

PRELIMINARY AMENDMENT

BOX PATENT APPLICATION
 Assistant Commissioner for Patents
 Washington, DC 20231

Sir:

Prior to initial examination, please amend the above-identified patent application as follows:

IN THE SPECIFICATION:

Page 1, after the title, insert the following headings:

--BACKGROUND OF THE INVENTION--.

Page 1, line 10, before "which" insert --and--.

Page 2, line 7, insert the following heading:

--SUMMARY OF THE INVENTION--.

Page 6, delete lines 29-31 in their entirety.

Page 6, line 36, change "drawing" to read --drawings--.

RECEIVED JUN 1 2000

Page 6, line 37, insert the following heading:

--BRIEF DESCRIPTION OF THE DRAWINGS--.

Page 6, line 38, after "device" change the period (.) to a semi-colon (;).

Page 7, line 1, after "device" change the period (.) to a semi-colon (;).

Page 7, line 8, insert the following heading:

--DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS--.

Page 9, line 3, after "lever" insert --, or lever cam,--.

Page 10, line 31, after "possible." add the following sentence: --The scope of the present invention is defined in the appended claims and equivalents thereto.--

IN THE CLAIMS:

Please cancel original claims 1-18 and rewrite them as new claims 19-36, and add new claim 37 as follows:

--19. A device for affixing objects to products moving in a row, the device comprising a holder for a stock of the objects and with affixing means further comprising a carrier for removing one of the objects from the holder and moving the object, wherein the affixing means is capable of rotary movement about an axis of rotation and of affixing the object to the moving product during the rotary movement of the affixing means, wherein the affixing means can be driven intermittently between rotation and standstill, and wherein during the standstill of the affixing means the carrier can remove the object from the holder.

20. The device according to claim 19, wherein the affixing means includes more than one carrier, wherein the carriers are positioned a substantially uniform distance apart in a circle around the axis of rotation and in such a manner that one of the carriers is positioned near the holder during the standstill of the affixing means while a place where the objects are to be affixed to the products is located at a position on the circle located substantially centrally between two of the carriers.

21. The device according to claim 19, wherein the carrier is provided with at least one suction nozzle for engaging one of the objects, and wherein the suction nozzle has a diameter of more than 15 mm.

22. The device according to claim 19, wherein the carrier is movable in a radial direction with respect to the axis of rotation.

23. The device according to claim 19, wherein the affixing means includes more than one carrier, wherein the carriers are positioned a substantially uniform distance apart in a circle around the axis of rotation, wherein the holder and a place where the objects are affixed to the products are positioned in such a manner with respect to each other that one of the carriers will be present at the location of the holder during the standstill of the affixing means while another of the carriers which has removed one of the objects from the holder will not yet have affixed the object.

24. The device according to claim 19, further including a glue dispenser capable of applying an amount of glue to the object engaged by the carrier.

25. The device according to claim 19, wherein the device further includes an electric driving motor whose rotational speed is controlled on a basis of signals from a pulse generator, and wherein the signals are a measure of speed of movement of the
5 products.

26. The device according to claim 19, further including control means capable of putting the carrier temporarily out of action.

27. The device according to claim 19, further including control means which is provided with detection means which detects that a moving product is approaching the affixing means.

28. The device according to claim 19, wherein the affixing means is driven via an index mechanism having an outgoing shaft that is intermittently stationary and an ingoing shaft that rotates continuously.

29. The device according to claim 28, wherein the ingoing shaft of the index mechanism further drives a driving mechanism for driving the carrier during the standstill of the affixing means.

30. The device according to claim 29, wherein the driving mechanism can move the carrier during the standstill of the outgoing shaft.

31. The device according to claim 28, wherein the ingoing shaft of the index mechanism includes a cam disc against which a cam abuts, and wherein the cam is provided on a driving mechanism for driving the carrier during the standstill of the affixing means.

32. The device according to claim 31, wherein the cam is provided on a lever which is rotatable about a shaft such that rotation of the shaft causes the carrier to move.

33. The device according to claim 32, wherein the driving mechanism comprises a lever rotatable about a shaft, wherein the lever is provided with a lever cam, and wherein movement of the lever cam causes the carrier to move.

34. A method for affixing objects to products moving in a row, comprising the steps of:

removing an object by affixing means from a holder of a stock of objects; and

subsequently moving the object by the affixing means to a position in which the affixing means abuts against a moving product, while the affixing means is rotated about an axis of rotation at such a speed that a speed of movement of the object is substantially equal to the speed of movement of the product,

10 wherein the affixing means is driven intermittently between rotation and standstill,

and wherein during the standstill of the affixing means the carrier removes the object from the holder.

35. The method according to claim 34, wherein the affixing means is driven via an index mechanism having an outgoing shaft which is intermittently stationary and an ingoing shaft which rotates continuously.

36. The method according to claim 35, wherein the ingoing shaft further drives a driving mechanism which drives the carrier during the standstill of the affixing means.

37. The device according to claim 24, wherein the glue dispenser applies the amount of glue to the object engaged by the carrier during the standstill of the affixing means.--

IN THE ABSTRACT:

The Abstract Of The Disclosure has been rewritten and a copy thereof is attached for insertion into the application.

REMARKS

The specification has been amended by this Preliminary Amendment to place the application in conformance with standard United States Patent practice.

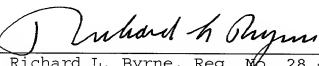
Original claims 1-18 have been canceled and rewritten as claims 19-36 in order to conform the claims with customary United States Patent practice.

The Abstract Of The Disclosure has also been rewritten to bring it into conformity with standard United States Patent practice. A copy of the Abstract Of The Disclosure is attached hereto for insertion into the application.

Examination and allowance of claims 19-37 are respectfully requested.

Respectfully submitted,

WEBB ZIESENHEIM LOGSDON
ORKIN & HANSON, P.C.

By 
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A DEVICE AND A METHOD FOR AFFIXING OBJECTS TO PRODUCTS

5

The invention relates to a device for affixing objects to products moving in a row, which device is provided with a holder for a stock of said objects and with affixing means comprising a carrier for removing an object from said holder and moving said object, which affixing means are capable of rotary movement about an axis of rotation and of affixing said object to the moving product during said rotary movement.

- 15 A device of this kind can for example be used for placing objects, such as product samples, in a magazine. For example, bags of shampoo or bags of soup can be glued to a particular page of a magazine. This can be done when quires of said magazines are joined on a binding machine, 20 whereby said quires move along in a row.

The device may also be used for affixing address labels or other appendices to parcels, for example, before said parcels are enveloped in transparent plastic material.

25

The device may for example also be used for providing flat sheets, from which a packaging box is to be formed, with stiffening parts which are glued to said flat sheet to form a stiffening element in the box when it is folded 30 at a later stage.

- With such a device, it is important that the occurrence of malfunctions is reduced to a minimum, because the affixation of objects by means of such a device forms 35 part of a comprehensive, continuous process, which process can be stopped entirely by a malfunction. Generally, such a device is only suitable for affixing one particular type of object.

The objective of the invention is to provide a device for affixing objects to products moving in a row, wherein different kinds of objects, in particular objects having a three-dimensional shape of other objects which are difficult to handle, can be affixed at a high rate in a reliable manner.

To this end, the affixing means can be driven intermittently, with rotation and standstill alternating with each other, during which standstill the carrier can remove an object from the holder. The temporary standstill of the affixing means enables the carrier to remove an object from the holder in a reliable manner, whilst the rotary movement of the affixing means causes the carrier to move in a circular arc, which is a suitable movement for affixing the objects being taken to products moving in a rectilinear path.

Preferably, the affixing means are provided with more than one carrier, three carriers in a preferred embodiment, wherein the carriers are positioned a substantially uniform distance apart in a circle round the axis of rotation, in such a manner that one carrier is positioned near the holder during standstill of the affixing means, whilst the place where the objects are to be affixed to the products is located at a position on said circle, substantially centrally between two carriers. When three carriers are provided, the carrier which is positioned straight above the affixing means during standstill of the driving means can pull objects from a holder at the underside thereof, whilst a carrier which moves in a circular path, during which movement it can affix an object to a moving product, will be present at the underside of the affixing means during the rotation of the driving means that is carried out in order to place the next carrier in the upper position. It is also possible to place the holder in a position other than straight above the affixing means.

Preferably, a carrier is provided with a suction nozzle, preferably two suction nozzles, for engaging an object. Since the affixing means are at a standstill while said engaging takes place, a sub-atmospheric pressure can be generated in said suction nozzle whilst the object abuts against the nozzle at rest. As soon as a desired sub-atmospheric pressure is available, the object can be pulled from the holder and the affixing means can start to rotate. By making the diameter of the suction nozzle sufficiently large, preferably more than 15 mm, a relatively large engaging force can be effected in a relatively short period. The use of two suction nozzles positioned next to one another makes it possible to effect a very stable engagement.

15 Preferably, the carrier is movable in radial direction with respect to the axis of rotation, so that the carrier can move during standstill of the affixing means, to a position in which it abuts against an object which is present in the holder, from which position it can pull said object from the holder when the carrier moves in reverse direction.

In one preferred embodiment, the affixing means are provided with more than one carrier, wherein said carriers are positioned a substantially uniform distance apart in a circle round the axis of rotation, wherein the holder on the one hand and the place where the objects are affixed to the products on the other hand are positioned in such a manner with respect to each other, that one carrier will be present at the location of the holder during standstill of the affixing means, and another carrier, which has removed an object from the holder, will not have affixed said object yet.

25 Furthermore, a glue dispenser may be present, which is capable of applying an amount of glue to the object which has been engaged by a carrier. The object can then be glued to the product. Especially if the glue is to be

applied in a specific manner, for example in order to glue the object to the product in a specific manner, it will be advantageous to apply the glue during standstill of the carrier with the object, which can take place whilst another carrier is engaging an object.

During standstill of the affixing means, an object which has been engaged by a carrier can furthermore be provided with a text, a number or other mark or code, for example by means of an inkjet printer. The encoding of objects in this manner may be considered to constitute an invention by itself.

Preferably, the device is provided with its own electric driving motor, and it is preferred not to have the device driven by the same driving means that move the products. This makes it possible to use the device in a flexible manner, in particular with regard to the location at which the device is installed. Preferably, the rotational speed of the driving motor is controlled on the basis of signals from a pulse generator, which signals are a measure for the speed of movement of the products. Such a pulse generator can be mounted near a rotary shaft of the driving means that move the products, wherein the pulse generator delivers signals which are a measure for the rotational speed of the shaft in question. The rotational speed of the driving motor can be adapted to the speed of movement of the products as desired via electronic control of the driving motor. Thus it is ensured that the rotation of the affixing means and the movement of the products take place in a synchronized manner.

In one preferred embodiment, control means are present, which are capable of putting a carrier temporarily out of action, so that said carrier will not engage an object from the holder during standstill at the holder. This makes it possible to select whether or not to affix an object to a product, for example when a product is

missing in the row of moving products, without interfering with the movement of the affixing means.

In another embodiment, control means are present, which
5 control means are provided with detection means, which detect that a moving product is approaching the affixing means. The rotation of the affixing means can be controlled in such a manner that a rotation is started when a product is approaching, whilst the approach of a
10 next product is awaited during standstill.

By using the device it becomes possible to control and/or adjust the speed of motion of the object during rotation on the one hand and the time span between two successive
15 affixing moments of an object on the other hand independently of each other.

In one preferred embodiment, the affixing means are driven via an index mechanism, whose outgoing shaft is
20 intermittently stationary, whilst the ingoing shaft rotates continuously. Such an index mechanism, which is known per se, is commercially available. Preferably, the ingoing shaft of the index mechanism also drives a driving mechanism for driving parts of the device, for
25 example the carrier, during standstill of the affixing means, so that the carrier can move during standstill of said outgoing shaft. Thus, the movement of the carrier can take place at precisely the right moment during standstill of the affixing means.

30 To that end, the ingoing shaft of the index mechanism is preferably provided with a cam disc, against which a cam abuts, which cam is provided on a driving mechanism for driving parts of the carrier during standstill of the
35 affixing means. The cam may be provided on a lever which is rotatable about a shaft, whereby rotation of said shaft causes the carrier to move.

Preferably, said driving mechanism comprises a lever which is rotatable about a shaft, which lever is provided with a cam, whose movement causes the carrier to move.

5 The invention furthermore relates to a method for affixing objects to products moving in a row, whereby an object is removed by affixing means from a holder of a stock of objects and subsequently moved by said affixing means to a position in which it abuts against a moving
10 product, whilst the affixing means are rotated about an axis of rotation, at such a speed that the speed of movement of the object is substantially equal to the speed of movement of the product, wherein the affixing means are driven intermittently, with rotation and
15 standstill alternating with each other, during which standstill the affixing means remove an object from the holder. The speed at which said affixation takes place is higher than 5,000 objects per hour thereby, preferably higher than 10,000 objects per hour.

20 The affixing means can thereby be driven via an index mechanism, the outgoing shaft of which is intermittently stationary, whilst the ingoing shaft rotates continuously, wherein said ingoing shaft can also drive a
25 driving mechanism, which drives parts of the device, for example the carrier, during standstill of the affixing means.

Further aspects of preferred embodiments will be
30 described by means of an example and be defined in the claims.

In order to provide a better understanding of the invention, an embodiment of a device for affixing objects
35 to moving products will be described hereafter with reference to the drawing.

Figure 1 is a side view of the device.

Figure 2 is a front view of the device.

Figure 3 is a rear view of the device; and

Figure 4 is a plan view of the device.

- 5 The figures are merely diagrammatic representations, wherein certain parts have been left out in each figure so as to show other parts more clearly.

- Figure 1 is a side view of the machine, that is, the
10 machine is shown in the direction of movement of the row of products. The path in which the products move lies near line 1. Present above said path 1 are affixing means 2, which rotate about axis of rotation 3. The affixing means 2 are provided with three carriers 4, which are
15 positioned relative to each other as shown in Figure 2.

- Present above the affixing means 2 is a holder 5, in which a stack of objects 6 is present, for example a stack of bags of shampoo. Said holder 5 is only shown in
20 Figure 1. Figure 1 furthermore shows a radial, upward movement of carrier 4, which makes it possible to move nozzle 7 in abutment with the lowermost object 6 in holder 5. When suction nozzle 7 abuts against the lowermost object 6, a sub-atmospheric pressure can be
25 generated in said suction nozzle, as a result of which the lowermost object 6 can be pulled from holder 5 when carrier 4 moves downwards to its starting position.

- Figure 2 shows how the affixing means 2 can rotate
30 through an angle of 120° in order to move the next carrier 4 to the upper position, from where said next carrier 4 can take along an object 6 from holder 5. Then the affixing means are rotated further through 120° , whereby the object 6 that was take along first is affixed
35 to a product moving in path 1 in the direction indicated by arrow 8. The sub-atmospheric pressure is thereby released the moment carrier 4 occupies the lower position.

It will be apparent, that the affixing means 2 rotate through an angle of 120° each time, whereby an object 6 can be affixed to a passing product, whilst affixing means 2 will be stationary for some time after each rotation, wherein a carrier 4 occupies the upper position, engaging an object 6 from holder 5 thereby.

Each carrier 4 is provided with an air hose 9, through which air can be sucked out of nozzle 7 or be supplied to said nozzle 7. To that end, a discharge hose 10 is provided, through which air is sucked out. Discharge hose 10 is in communication with chamber 11, which extends along a circular arc in a stationary housing 12, which is pressed against rotatable affixing means 2 by means of coil spring 13. During rotation, the air hoses 9 are temporarily in communication with chamber 11, and that from the moment the respective carrier 4 occupies the upper position until the moment said carrier 4 occupies the lower position. When carrier 4 passes said lower position, the hose 9 of the carrier 4 in question comes into contact with chamber 14, in which an atmospheric pressure prevails. Also chamber 14 is provided in housing 12, it extends along a circular arc. Chambers 11 and 14 are illustrated in dashed lines in Figure 2, the sectional view of Figure 1 shows chamber 1 and the sectional view of Figure 4 shows chamber 11 as well as chamber 14, whereby said figure also shows chamber 14 to be in communication with the atmosphere.

The circular path on which nozzles 7 are located during rotation of affixing means 2 is illustrated in a chain-dotted line 15 in Figure 2.

Each carrier 4 is provided with a coil spring 16, which retains the carrier in question in its starting position, whereby stop 17 abuts against affixing means 2. Carrier 4 can be moved upwards when occupying its upper position, so that nozzle 7 is placed in abutment with an object 6

in holder 5. Said upward movement is driven by lever 18, which is mounted on shaft 19, whereby a cam 20 of said lever abuts against part 21 of carrier 4. Rotation of shaft 19 causes lever 18 to move upwards, and carrier 4 moves upwards correspondingly, so that suction nozzle 7 can engage an object 6 from holder 5.

Figure 2 shows a glue dispenser 22, by means of which a predetermined amount of glue can be sprayed onto object 6 in order to cause object 6 to adhere to the product which is moving along in path 1. The glue is applied to the object during standstill of the affixing means 2. Instead of a glue dispenser, an inkjet printer may be provided, by means of which a code can be placed on the object.

The device is driven by means of a driving motor 25, whose speed is controlled by means of a speed controller 26 on the basis of signals which indicate the speed of movement of the products in path 1. To that end, speed controller 26 can be connected to a pulse generator (not shown), which is mounted on the driving means of the moving objects.

As is shown in Figure 3, outgoing shaft 27 of driving motor 25 is drivably connected to the ingoing shaft 29 of an index mechanism 30 (Figure 1) by means of a toothed belt transmission 28. Index mechanism 30 comprises an ingoing shaft 29 and an outgoing shaft 31, on which outgoing shaft the driving means 2 are mounted.

The index mechanism which is used in this embodiment is a commercially available product. When ingoing shaft 29 of index mechanism 30 makes one revolution at a substantially constant speed, outgoing shaft 31 will rotate through an angle of 120° , whereby shaft 31 will be stationary for some time and carry out said rotation for some time. The position which is shown in Figures 1 and 2 is the position in which affixing means 2 are stationary.

Ingoing shaft 29 is furthermore provided with a cam disc 35, against which cam 36 abuts (Figure 3). Cam 36 is provided on lever 37, which is attached to shaft 19 and which is pressed against cam disc 35 by means of draw 5 spring 38. Lever 37 is moved upwards with every revolution of ingoing shaft 29, and since lever 37 is connected, via shaft 19, to lever 18 (Figure 2), a carrier 4 is moved upwards by means of cam 20. The control is thereby such that said movement takes place 10 while affixing means 2 are stationary.

In addition, a control element 39 is present, which holds lever 37 in its lowermost position, if desired, so that cam 36 will not follow the surface of the cam disc 35, 15 and carrier 4 will not make an upward movement. Control element 30 is excited when a carrier must not take an object from holder 5, it is preferably pneumatically driven.

20 The device is furthermore provided with a frame 40, which is preferably mounted on a movable support which is disposed on the floor, in which support frame 40 can be fixed in such a manner that the device will be positioned at a desired location. As a result of that, no additional 25 means are required for attaching the device to another device, and the device can easily be used at varying locations.

The illustrated embodiment of the device is only an 30 example, which is given by way of illustration, several other embodiments of the device are possible.

CLAIMS

1. A device for affixing objects (6) to products moving
in a row, which device is provided with a holder (5)
5 for a stock of said objects (6) and with affixing
means (2) comprising a carrier (4) for removing an
object (6) from said holder (5) and moving said
object (6), which affixing means (2) are capable of
rotary movement about an axis of rotation (3) and of
10 affixing said object (6) to the moving product
during said rotary movement, characterized in that
said affixing means (2) can be driven
intermittently, with rotation and standstill
alternating with each other, during which standstill
15 the carrier (4) can remove an object (6) from the
holder (5).
2. A device according to claim 1, characterized in that
said affixing means (2) are provided with more than
20 one carrier (4), wherein the carriers (4) are
positioned a substantially uniform distance apart in
a circle round the axis of rotation (3), in such a
manner that one carrier (4) is positioned near the
holder (5) during standstill of the affixing means
25 (2), whilst the place where the objects (6) are to
be affixed to the products is located at a position
on said circle, substantially centrally between two
carriers (4).
3. A device according to any one of the preceding
claims, characterized in that a carrier (4) is
30 provided with a suction nozzle (7), preferably two
suction nozzles (7), for engaging an object (6),
which suction nozzle (7) preferably has a diameter
35 of more than 15 mm.
4. A device according to any one of the preceding
claims, characterized in that a carrier (4) is

movable in radial direction with respect to the axis of rotation (3).

- 5 5. A device according to any one of the preceding claims, characterized in that said affixing means (2) are provided with more than one carrier (4), wherein said carriers (4) are positioned a substantially uniform distance apart in a circle round the axis of rotation (3), wherein the holder 10 (5) and the place where the objects (6) are affixed to the products are positioned in such a manner with respect to each other, that one carrier (4) will be present at the location of the holder (5) during standstill of the affixing means (2), whilst another 15 carrier (4), which has removed an object (6) from the holder (5), will not have affixed said object (6) yet.
- 20 6. A device according to any one of the preceding claims, characterized by a glue dispenser (22), which is capable of applying an amount of glue to the object (6) which has been engaged by a carrier (4), preferably substantially during standstill of said affixing means (2).
- 25 7. A device according to any one of the preceding claims, characterized in that said device is provided with an electric driving motor (25), whose rotational speed is controlled on the basis of 30 signals from a pulse generator, which signals are a measure for the speed of movement of the products.
- 35 8. A device according to any one of the preceding claims, characterized by control means which are capable of putting a carrier (4) temporarily out of action.

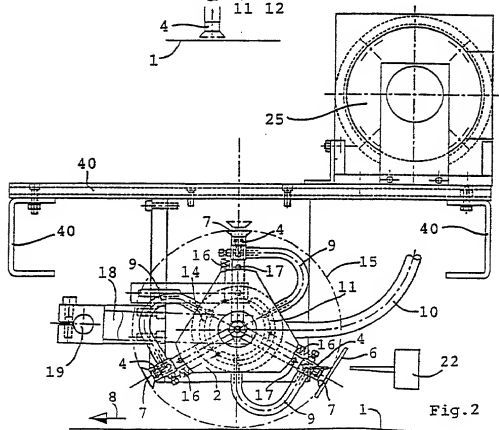
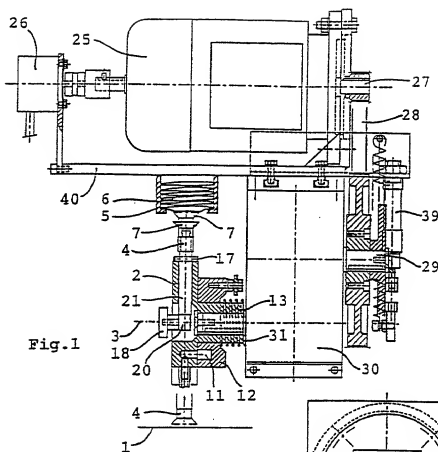
9. A device according to any one of the preceding claims, characterized by control means, which are provided with detection means, which detect that a moving product is approaching the affixing means (2).
10. A device according to any one of the preceding claims, characterized in that said affixing means (2) are driven via an index mechanism (30), whose outgoing shaft (31) is intermittently stationary, whilst the ingoing shaft (29) rotates continuously.
11. A device according to claim 10, characterized in that the ingoing shaft (29) of said index mechanism (30) also drives a driving mechanism (35, 36, 37, 19, 18, 20) for driving parts of the device, for example the carrier (4), during standstill of the affixing means (2).
12. A device according to claim 11, characterized in that said driving mechanism (35, 36, 37, 19, 18, 20) can move the carrier (4) during standstill of said outgoing shaft (31).
13. A device according to any one of the claims 10 - 12, characterized in that said ingoing shaft (29) of the index mechanism (30) is provided with a cam disc (35), against which a cam (36) abuts, which cam is provided on a driving mechanism (35, 36, 37, 19, 18, 20) for driving parts of the device, for example the carrier (4), during standstill of the affixing means (2).
14. A device according to claim 13, characterized in that said cam (36) is provided on a lever (37) which is rotatable about a shaft (19), whereby rotation of said shaft (19) causes the respective part of the device, for example the carrier (4), to move.

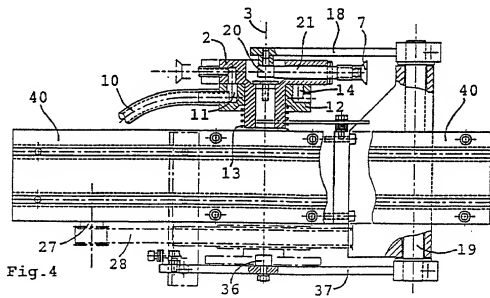
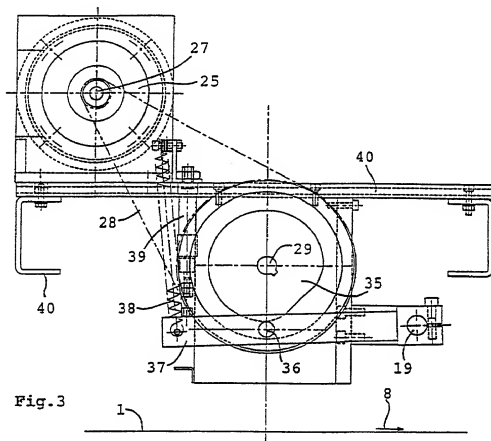
15. A device according to claim 14, characterized in that said driving mechanism (35, 36, 37, 19, 18, 20) comprises a lever (18) which is rotatable about a shaft (19), which lever is provided with a cam (20), whose movement causes the carrier (4) to move.
16. A method for affixing objects (6) to products moving in a row, whereby an object (6) is removed by affixing means (2) from a holder (5) of a stock of objects (6) and subsequently moved by said affixing means (2) to a position in which it abuts against a moving product, whilst the affixing means (2) are rotated about an axis of rotation, at such a speed that the speed of movement of the object (6) is substantially equal to the speed of movement of the product, characterized in that said affixing means (2) are driven intermittently, with rotation and standstill alternating with each other, during which standstill the affixing means (2) carrier remove an object (6) from the holder (5).
17. A method according to claim 16, characterized in that said affixing means (2) are driven via an index mechanism (30), the outgoing shaft (31) of which is intermittently stationary, whilst the ingoing shaft (29) rotates continuously.
18. A method according to claim 17, characterized in that said ingoing shaft (29) also drives a driving mechanism (35, 36, 37, 19, 18, 20), which drives parts of the device, for example the carrier (4), during standstill of the affixing means (2).

A DEVICE AND A METHOD FOR AFFIXING OBJECTS TO PRODUCTS

ABSTRACT OF THE DISCLOSURE

5 A device for affixing objects to products moving
in a row, which device includes a holder for a stock of the
objects and with an affixing device that includes a carrier
for removing an object from the holder and moving the
object. The affixing device is capable of rotary movement
about an axis of rotation. The object is affixed to the
moving product during the rotary movement of the affixing
10 device. The affixing device can be driven intermittently
between rotation and standstill. During the standstill of
the affixing device, the carrier can remove the object from
the holder. Preferably, more than one carrier is provided,
with the carriers each provided with a suction nozzle.





Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

A device and a method for affixing objects to products
the specification of which
(check one)

☐ is attached hereto.

☐ was received on 01 June 2000 as

Application Serial No. 09/555,548

and was amended on 01 June 2000
(if applicable)

☒ was filed as PCT international application

No. PCT/NL98/00678 on 1 December 1998

and was amended under PCT Article 19 on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

<u>NL 1007683</u>	<u>The Netherlands</u>	<u>3 December 1997</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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